

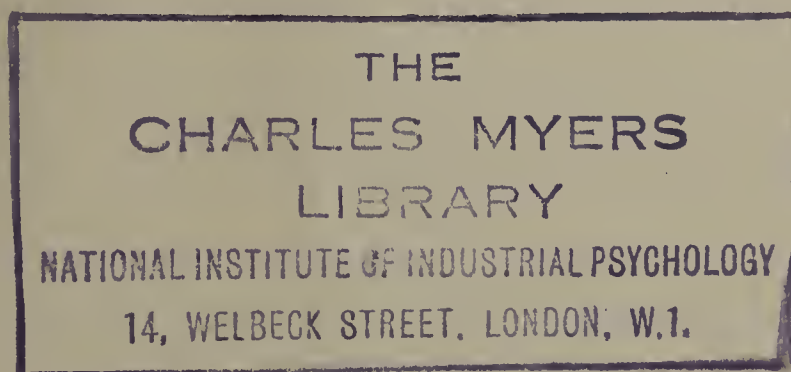
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THE MENTAL HYGIENE OF INTELLECTUAL WORK

BY

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THE MENTAL HYGIENE OF INTELLECTUAL WORK

It may sound perhaps a little ungracious, but I feel bound to confess that neither the subject nor the title of this address is of my own choosing. I received the invitation to deliver it, and I accepted its subject and title, at a time of extreme over-pressure when I had not the leisure to realise fully their implications and difficulties.

The general meaning of the title is, I suppose, at first sight clear enough : you are expecting to hear from me about the healthiest and happiest conditions for the conduct of intellectual work. And these conditions will not be restricted rigidly to the health and happiness of the intellectual worker : they will also include methods of facilitating and improving his work. For, other things being equal, the greater the ease and the efficacy of intellectual work, the less strain and worry will be thrown on the worker, and the better consequently will be his health and happiness.

I assume that the qualification « mental » has been prefixed to the term « hygiene » because our Congress itself bears the name « Mental Hygiene », being concerned with problems essentially of mental, not of general bodily, health ; and that there is no implication here that a definite line should be drawn, or even imagined, between the psychical, physiological and physical conditions that determine the health of the individual in his easiest and most efficient performance of intellectual work.

At first sight the second part of the title of my address presents no difficulty : everyone, it will be said, knows what is implied and involved by « intellectual work ». Whether most

of you will agree with this statement at the close of this communication I am not so sure. Certainly no trained psychologist can share the popular notion that the expression « intellectual work » will be understood and used by everyone in exactly the same sense.

But leaving aside definitions and the precise implications of the title of this address, and coming now to its subject, I find two things clear at the outset. The first of these is that extremely little research, and very much less of a reliable character or producing clear-cut results, has been conducted into the hygienic conditions affecting intellectual work. The second is that individual differences are so enormous and so important that, in most directions at least, it will be impossible to reach general conclusions and to lay down definite laws of mental health with regard to intellectual work.

For example, some of the finest intellectual work, especially poetical work, has been produced under the constant influence of alcohol, opium, etc., whereas at the opposite extreme equally eminent intellectual workers have totally abstained from such drugs and may have by actual experience found them detrimental to production. Some intellectual workers have laid stress on strictly ordered diet and sleep : the habits of others in these and other respects have been highly irregular. Some insist on, while others deny, the need for physical exercise. Some claim to do their best work in the daytime, others prefer to work at night. Some work better, others worse, after a mid-day *siesta*. Some find that they can produce their best when walking about their room or in the open air : others work most effectively sitting, and a few even lying down. Some prefer a very lively, some a quiet environment ; some don even a special dress for their work. Some can only work for short spells or under conditions of extreme excitement : others need fewer rests and are far more placid. Many women find intellectual activity impeded by their menstrual periods ; whereas some have said that it is just then that they do their best work.

These differences are far greater than would be revealed by a corresponding inquiry in the field, say, of athletics. Clearly they are dependent not merely on the constitution and personality of the individual worker, but also on the nature of the mental processes which are involved in his particular intellectual work. Let us consider first two very simple kinds of intellectual work, the one entering into the work of the clerk or mathema-

tician, the other simpler than, but resembling, the work of the proof-reader. In the former, successive pairs of numerical figures in a long series have to be added together. In the other, one or more prescribed letters in successive lines of a printed text have to be cancelled. I have chosen these examples partly because both of them have been employed in the laboratory for the analysis of the psychological factors which are involved in mental work, namely « practice », « fatigue », « incitement », « spurts », and other irregularities and fluctuations which may be of voluntary, emotional or unconscious origin. Such researches have shown us how « fatigue » is advantageously lost in an interpolated rest pause ; how important is the factor of « incitement », i. e. the gradual process of « settling down » (or « warming up ») to the work ; and how, in contrast to « fatigue », this is *disadvantageously* lost during the rest-pause. From other researches we know, too, the importance of « perseveration » in the readiness of passing from one kind of task or thought to another, the lowly perseverative person finding the change far easier than the person who is innately endowed with high perseveration. And we know how we are safeguarded from complete mental exhaustion by higher inhibitory control ; that in consequence we never work to the fullest possible efficiency ; and that even in « fatigued » states « spurts » are always possible, as is exemplified in the « end spurt » which so commonly occurs when we know that the end of our task is approaching.

But I have chosen these two examples also because they illustrate — in an exaggerated degree — how unconscious factors enter into all intellectual work. In the educated adult at least, such tasks as adding successive pairs of figures or cancelling prescribed letters, become, through previous experience, purely automatic. All that is ultimately required is a certain maintenance of appropriate « attitude » ; the worker's thoughts may wander in quite other directions, but the additions or cancellations proceed with maximal efficiency, so long as this attitude is maintained ; and the maintenance of this attitude involves a certain intellectual activity. It is true that in the educated adult neither of these two tasks demands the use of « intelligence » ; by which I understand the ability consciously to discern relevant relations and to make appropriate use of them. But intelligence, even if of no high order, has been employed in acquiring the necessary previous knowledge and in

mastering the instructions laid down for making present use of it.

We must not overlook the fact that all intellectual work depends for its success on previously acquired knowledge of the data involved in it ; otherwise we shall confuse stupidity of intellect with ignorance of the required material. It is quite possible for the processes of judgment and inference to act quite normally, false conclusions, however, being drawn from an incomplete, inadequate array of facts. And this may be due not only, as I have just said, to ignorance, but also to prejudicial emotions, sympathies and interests, or to conservatism, the resistances and rationalisations of unconscious conflicts, and the like. Such detrimental conditions have an obvious bearing on the mental hygiene of intellectual work.

Now the learnt facts of previously acquired knowledge are merely what the psychologist has called « completely constrained » associations : *a* and *b* have become associated together and integrated by repeated experience, so that when part of the whole, *a*, is given, no correct response but *b* can possibly be returned. But the psychologist recognizes also a second, diametrically opposite, class of association, which he calls « completely free » association, — when *c* is given and the person is at full liberty to react by any response whatever that comes to him. And between these two extremes the psychologist recognizes, thirdly, « partially constrained » associations in which the person is neither bound to one definite response nor free to give any response. A variety of correct responses is possible ; but to give any one of these, a certain « directive influence » must be brought to bear on the current of his thoughts — a direction which is determined by and is in harmony with some goal, scheme or purpose. Thus we distinguish the « free » play of « phantasy » in the second class from « directed » thinking » in the third class of « associations ».

Closely analogous to these second and third kinds of « associations » are the two very different intellectual processes of suddenly appearing inspirations on the one hand, and of the conscious thinking out of new ideas, on the other. In both kinds of process new ideas are brought into existence, in the one case by unconscious, in the other by conscious intellectual work. But usually in both cases, the theoretical, practical or artistic value of new ideas has to be subsequently assessed by conscious directed thinking ; they have also usually to be finally

modified and elaborated by such thinking into a form suitable for social communication and appreciation. (I say « usually » because there are rare instances, especially in the artistic field, where creative production seems to reach maturity without any conscious intellectual work whatever).

I regard the creative inspirations of genius which flash suddenly into consciousness as having a dual causation. One of these two causes consists in antecedent directed thinking, — that is to say, in such hard, wide and constant concentration on the problem at issue, that the « determining tendency », as it is sometimes called, persists when, in other waking moments or in sleep, attention is no longer being given consciously to the problem. This factor of « incubation » comes familiarly also into play after we have tried hard and vainly to recall a forgotten name, or after we have only imperfectly learned a task by repeated practice : successful recall or complete learning occurs through subsequent distraction to other work, or (still better) through rest or sleep ; and this has often been attributed to the removal of previous unfavourable inhibitions. But it is also doubtless due to the unconscious continuance of the « determining tendency » of previous directed thinking. Such is largely, I consider, the source of the inspirations of the philosopher, the scientist, and the inventor. These intellectual workers owe many of their discoveries to the unconscious consequences of hard thinking.

But, judging from their evidently maladjusted mental lives and from their own statements, many poets, musicians and other artists owe their creative genius in some unknown way to quite a different cause — the clash of unconscious conflicts. Their flashes of inspiration assume accordingly rather the nature of dreams ; their inspired state is more akin to the condition of a partly dissociated, dreaming personality than to the condition of one that is fully awake and normally integrated. (This kind of originality may be compared perhaps to the new culture that may arise from the clash of cultures of two different peoples).

If new mental products may arise from such fundamentally different origins, it is not surprising that different intellectual workers, as I have already pointed out (page 4), have insisted on such different environmental and other conditions, so much at variance with one another, which they each (it may well be rightly) regard as essential or favourable for their work. Can we escape from this difficulty by taking up the position that

creative mental activity is only to be regarded as coming within the purview of intellectual work when it originates consciously and immediately from conscious cognitive activity, and that when it occurs unconsciously it is only *material for* intellectual work, and not the *product* of such work? I do not think that we can either practically or profitably draw any such line between the conscious and the various unconscious aspects of intellectual activity. We can, of course, readily and usefully distinguish them, just as we can distinguish (conscious) will and (conscious or unconscious) impulse. But just as we include both will and impulse in conation, so I think we must include both the conscious and the unconscious creative imagination in intellectual work.

Some may feel disposed to limit intellectual work to conscious judgment and reasoning, but for my own part. I cannot see how intellectual work is ever absent in *any* cognitive activity. It is surely present in all perception, — *unconsciously* active when we perceive familiar objects, and *consciously* active when we are apprehending new objects, or comparing or distinguishing them. Intellectual work is also surely involved in learning and in recall (however « mechanical » be our notion of memory). By common consent, of course, it is involved in the formation of abstract ideas, judgments, beliefs, and inferences, in deliberation and decision, i. e. in « thinking ». Indeed these two latter, — thinking, no doubt more than learning — are what is popularly implied by intellectual work. Let us then confine ourselves now to the processes of learning and thinking, and see whether we can thus contribute to the hygiene of these two kinds, at least, of intellectual work.

In learning and thinking the emotional and conative factors are of fundamental importance. Irritation, worry, anxiety, obsessional tendencies and the consequences of other maladjustments and conflicts are obviously detrimental. Normal affective conditions and unobstructed volition must therefore be our ideal. We must aim, not merely at directly « training the intellect », but at developing the whole personality in harmony with its social setting. It has been reported that as many as 85 per cent. of the students in a number of American Colleges are, in various degrees, emotionally maladjusted; the commonest condition observed being the phobic (anxiety) state, and next in order being the cyclo-thymic (manic-depressive), the introverted (schyzoid) and the impulsive (obsessional) states. Similarly, in

four groups of students in England, about 70 per cent. were found to be emotionally maladjusted.

Interest, and native talents on which innate interest so much depends, are likewise important : we have only to compare the behaviour of the average school child at work and at play, or that of any given adult engaged now in practical, now in theoretical work, to realise the wide differences in ease and effectiveness of intellectual work which result according as the person is interested in or bored with his task, and according as the work is suited or unsuited to his innate talents. Whether through interest or through incentives of reward or achievement, the goal must be made to seem worth while, if intellectual work is to be lasting and effective. Indeed it is the irresistible urge to a goal — even to a self-regardless call or mission, — that distinguishes the persistent, profound and successful intellectual worker.

But the importance of interest may be, and now is often, exaggerated in early life, — and neglected later. Freedom, spontaneity, self-expression, self-assurance and individuality are to be encouraged ; nevertheless much can be done to improve adult intellectual work by juvenile discipline. Discipline, however, should not be synonymous with mere routine drill and servility ; it should be used not only to establish good habits of working, but also to explain their *raison d'être*. I believe that a series of interesting exercises could be systematically planned and practised so as to improve intellectual work. Thus, by the use of appropriate exercises, distracting impulses and caprices will be better controlled ; and concentration and voluntary effort, so essential for thorough intellectual work, will be facilitated. By appropriate exercises, too, words and ideas will become more easily thought of in other than their usual sense and relations, and a richer, more flexible, imagination will be encouraged, so that phenomena, hitherto separate, can be more readily combined in thought and seen from a single viewpoint and a new light. Moreover by exercises an argument will be more readily seen as a whole, its threads being more easily gathered together ; and not only the criticism of judgments, inferences and beliefs, but also unconscious intuition and insight, will be improved by systematic practice in trying to marshall and to evaluate all the favourable and unfavourable facts bearing on a recent conclusion.

By such early disciplinary measures — by the systematic

practice of exercises involving general principles, the nature of which is always carefully explained, so far as possible, to the young intellectual worker — I believe that we may largely eliminate the superficial *dilettante*, the narrow and fastidious scholar, the too ready or too unwilling believer, and the confused thinker. But the education, and hence the hygiene, of each thinker must depend largely on his individual mental constitution. No fixed rules can be laid down. So much must depend, for example, on his innate powers of originality and on the source of these powers, the diverse nature of which I have already indicated.

As I have already also insisted, the facility and the fluency of later thought will be enormously helped by the earlier learning of important facts, definitions, etc. Hence routine learning is essential in education, so long as it does not degenerate into mere undesirable « cram », or later clog the adult thinker with too much detailed knowledge. And here psychological experiment indicates the economic advantages of certain learning methods. For example, it is generally better to distribute repetitions over a longer period than to try to learn by accumulating them within a shorter period of time ; and it is generally better, save in the case of unusually hard tasks, to learn the material as a larger whole than to divide it into small sections and to learn these piece-meal. Passive repetition is less favourable than active recall for retention. Moreover, it is desirable and possible, at an appropriate stage in educational life, to give instruction in the best attitudes and methods that should be adopted in acquiring knowledge, or at all events to indicate how these best attitudes and methods may be discovered, and to give the general principles and reasons for methods of work which have been previously learnt in routine fashion.

Change of work and rest pauses are important safeguards against needless boredom and harmful fatigue. Really hard thinking cannot long continue without impairment of efficiency: it needs to be interspaced by periods either of change to lighter mental work, of moderate physical exercise or of rest. It has been said that the fast worker tires more easily than the slow. Sleep is unquestionably beneficial to and necessary for intellectual work, but its optimal duration varies widely in different persons. Some shortening of the hours of sleep may be compensated for by its increased depth. Experimental work

shows that the severer deprivation of sleep may result at first (as indeed may fatigue) in improved intellectual efficiency. Ultimately, however, sleeplessness, even after the resumption of normal sleep, manifests itself in far worse subsequent work. It has been said that initiative rather than aptitude, and that speed rather than accuracy of work, are affected by insufficient sleep ; but the experimental data obtained by different psychologists in the whole of this field of research are extremely contradictory, as might be expected from the wide differences in the physiological and psychological constitution of different persons.

The relative efficiency of intellectual work performed by day and by night appears to depend largely, if not entirely, on habituation. Short periods of change from day to night work and *vice versâ* are unquestionably detrimental, especially if the duration and depth of sleep are thereby disturbed. Moreover, we have experimental evidence that, during waking hours, a certain rhythm of mental efficiency is established. It does not matter whether mental work be performed, or whether the mind rest from work ; in either case the efficiency of the day worker wanes gradually from the start to the end of the diurnal waking period.

The detrimental influence of noise and other unwanted sounds on intellectual work is due to their irritating distraction, which has been found to increase with their loudness, irregularity, unexpectedness and interest, with the uncertainty of their meaning or direction, and with the closeness of their relation to the intellectual work. The more difficult and the more uninteresting be that work, and the more tired or bored the worker, the more disturbing will become the noise. To regular noises, however, the intellectual worker can usually become adapted, apparently without any difficulty or detriment, provided that his task be not too hard. Primitively, noise is a cause of fear ; and since fear is one of the fundamental causes of mental maladjustment, it is not surprising, as we have been told, that the psycho-neurotic will seize on noise as an alleged cause of his inability to continue intellectual work. The remedy here lies in the cure of the maladjustment. But whatever its cause, distraction, so long as it endures, is by its very nature ultimately detrimental to intellectual work. Experiment appears to indicate that its influence may be more effectively overcome by giving increased attention to the task than by trying directly to neglect the cause of the distraction.

On physiological grounds intellectual work may seem to demand little food, but in practice this is far from being true. Intellectual work involves a very wide metabolic field, not only by reason of its own « directive » activity (of the physiological basis of which we are entirely ignorant), but also because of other concomitant, especially motor, activities (e. g. of respiratory, ocular and other bodily muscles which are thrown during intellectual work into a state of tension or movement). In times of scarcity of food there could be no greater national absurdity than to reduce the ration of the intellectual worker, if his efficiency is to be maintained. Experiment has shown that a dietetically balanced breakfast meal improves not only the physical health, but also the intellectual work, of children who had been hitherto coming to school improperly or insufficiently fed.

Frequent light meals are doubtless better than fewer heavy ones. Experiment has shown that each meal, however light, raises the respiratory quotient and increases muscular efficiency as determined in calories from the work done on a cycle-ergometer. It is likely that intellectual efficiency undergoes similar improvement.

Temperature and ventilation are also important, the precise optimal condition varying no doubt according to the individual. Efficient lighting is likewise essential, in order to reduce ocular strain which has a powerful adverse influence on intellectual work.

And, of course, the adequate functioning of the circulatory, respiratory, digestive and endocrine systems must not be forgotten. To sum up these observations on the mental hygiene of intellectual work is an impossible task. I have tried in this communication to show what a variety of mental processes, both conscious and unconscious, must be included in intellectual work, requiring very different conditions for their easiest and most effective action. I have also tried to show how differently persons are innately fitted for these different kinds of work, and that consequently the best hygienic conditions are dependent not only on the differences in kind of intellectual work but also on the individual differences among intellectual workers. With special reference to the intellectual work of learning and thinking, I have insisted on the need to pay far more attention initially to the harmonious development of the entire personality than to the mere « training

of the intellect », although I am convinced that appropriate exercises may be usefully devised, early applied and (sooner or later) explained in order to facilitate and improve these two processes. I have also stressed the need for appropriate diet, sleep, rest and freedom from distraction.

RÉSUMÉ

J'ai cherché à démontrer dans ce rapport quelle grande variété de processus, conscients et inconscients, sont compris dans le travail intellectuel et que chacun d'eux demande des conditions spéciales pour obtenir l'action la meilleure et la plus efficace.

J'ai essayé aussi de démontrer combien varie l'aptitude innée chez les individus pour ce genre de travail et que par conséquent les conditions hygiéniques dépendent non seulement des différences du genre de travail intellectuel, mais aussi des différences individuelles chez les travailleurs intellectuels.

Concernant le travail intellectuel de l'apprentissage et de la pensée, j'ai insisté sur l'obligation de donner beaucoup plus d'attention, dès le début, au développement harmonieux de la personnalité entière qu'à l'éducation pure et simple de l'intelligence. Je suis cependant persuadé que certains exercices bien appliqués et expliqués pourraient faciliter et améliorer ces deux modes de travail.

J'ai insisté aussi sur un point très important : un régime régulier, assez de repos et de sommeil, et des conditions de travail exemptes de distraction.

ABSTRACT

I have tried in this communication to show what a variety of mental processes, both conscious and unconscious, must be included in intellectual work, requiring very different conditions for their easiest and most effective action. I have also tried to show how differently persons are innately fitted for these different kinds of work, and that consequently the best hygienic conditions are dependent not only on the differences in kind of intellectual work but also on the individual differences among intellectual workers. With special reference to the intellectual work of learning and thinking, I have insisted on the need to pay far more attention initially to the harmonious development of the entire personality than to the mere « training of the intellect », although I am convinced that appropriate exercises may be usefully devised, early applied and (sooner or later) explained in order to facilitate and improve these two processes ; I have also stressed the need for appropriate diet, sleep, rest and freedom from distraction.

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